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**WATER QUALITY
MEMORANDUM**
Utah Coal Regulatory Program

June 25, 2012

TO: Internal File

THRU: Steve Christensen, Permit Supervisor *SC*

FROM: Ken Hoffman, Hydrologist *KH*

RE: Fourth Quarter of 2011 Water Monitoring, Alton Coal Development LLC, Coal Hollow, C/025/0005, Task ID #3959

The Coal Hollow mine is an active surface mine. The permit application was approved on October 15, 2009 and a Permit was issued to Alton Coal Development, LLC (ACD) on November 8, 2010. Mining activity commenced in November 2010. Surface mining of coal at the Coal Hollow mine is expected to continue for approximately three years.

The water monitoring program for the Coal Hollow mine is described in Section 731.200 of the MRP. Water monitoring locations are listed in Table 7-5 and shown on Drawing 7-10. Monitoring protocols are described in Table 7-4 and the specific protocol(s) assigned for each location are listed in Table 7-5. Operational/Reclamation and Baseline monitoring parameters are listed for surface water on Table 7-6A and Table 7-6B, respectively, and for groundwater on Table 7-7A and 7-7B, respectively. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases.

This report was prepared from monitoring data queried from the UDOGM database. The data that support this report were collected and submitted to the database by Alton Coal Development (ACD).

1. Were data submitted for all required sites?

Springs YES [X] NO []

Twelve springs are monitored quarterly (Table 7-5). All of the spring locations except one (SP-3) are located in Sink Valley Wash (Drawing 7-10). Spring location SP-19 is not shown on Drawing 7-10, but is shown on Drawing 7-1 (Spring and Seep Locations). Six springs are monitored for field parameters only: Sorensen Spring, SP-3, SP-16, SP-22 and SP-23. Six springs are monitored for field parameters and laboratory analyses: SP-4, SP-6, SP-8, SP-14, SP-20, and SP-33.

All springs were monitored during the Fourth Quarter of 2011. Flow measurements were recorded at the following spring sites:

SAMPLE	SITE	Flow (gpm)
SORENSEN SPRING	Alluvial spring Sink Valley	0.4
SP-14	Alluvium - Sink Valley	3.61
SP-16	(Teal Spring) - Alluvium -Sink Valley	1.18
SP-19	(Sorenson Pond)- Alluvium - Sink Valley	0.22
SP-20	Alluvium - Sink Valley	10.1
SP-22	Alluvium - Sink Valley	1.22
SP-23	Alluvium - Sink Valley	<0.25
SP-3	Pediment Alluvium - Lwr Sink Valley Wash	NA
SP-33	(Johnson Spring) - Alluvium - Sink Vly	5.8
SP-4	Alluvium/Fault? - Lwr Sink Valley Wash	0.704
SP-6	Alluvium - seep in Sink Valley	<5
SP-8	Alluvial spring at Dames Ranch	17

Notes: Data were collected from December 19-22, 2011.

Streams YES [X] NO []

Ten stream sites are monitored quarterly. Field parameters and laboratory analyses are performed for SW-2 (Kanab Creek below Robinson Creek); SW-3 (Kanab Creek above permit area); SW-4 and SW-5 Lower Robinson Creek [LRC] above permit area and above Kanab Creek, respectively); SW-6 (Sink Valley wash at permit boundary); SW-8 (Swapp Hollow Creek above permit area); and SW-9 (Sink Valley Wash below permit area). Field parameters only are measured at locations BLM-1 (LRC adjacent to mined areas); RID-1 (irrigation ditch in Robinson Creek); and SW-101 (LRC in permit area).

All required stream sites were monitored for the quarter during December 19-23, 2011. No flow was present for stream monitoring sites SW-101, SW-4, SW-4, SW-6, SW-9, and RID-1. Flows reported for Lower Robinson Creek averaged 0 gpm. Flow ranges from Kanab Creek averaged 1616 gpm; Swapp Hollow 40 gpm; and Sink Valley Wash at 0 gpm.

Wells YES [X] NO []

Table 7-5 identifies 32 wells which will be monitored quarterly when accessible. Wells will be monitored for water elevation only except for five wells, which will be monitored for water elevation and laboratory parameters: Y-61 (artesian Sink Valley alluvium above mining), LR-45 (LRC alluvium below mining), LS-85 (artesian Sink Valley alluvium below mining), SS-30 (Sink Valley alluvium below mining) and UR-70 (LRC alluvium above mining). Several wells are expected to be destroyed or rendered inoperable due to mining activities (MRP page 7-59). These wells are to be monitored quarterly until they are destroyed or rendered inoperable.

All groundwater wells were monitored during Fourth Quarter of 2011 including well LS-28 which was sampled for analytical parameters where only gauging was required.

UPDES **YES [X] NO []**

Discharges from the Coal Hollow mine are authorized under UPDES General Permit for Coal Mining application number UTG040027. The UPDES permit, which expires on April 30, 2013, authorizes discharges from six outfalls: 001, 001B, 002, 003, 004, and 005. These outfalls correspond to sediment ponds 1, 1B, 2, 3 and 4 and discharge location 005. Sediment pond locations are shown on Drawing 5-25. The UPDES permit identifies monitoring frequency and required parameters, effluent limitations, and storm water requirements. To date sediment ponds 1, 1B, 2 and 3 have been constructed. UPDES Outfall Numbers 003 and 005 discharged during the Fourth Quarter of 2011.

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database this quarter. Special Condition No. 1 of the mine Permit requires the Operator to submit water quality data for the Coal Hollow Mine in an electronic format through the Electronic Data Input web site.

During the Fourth Quarter of 2011, ACD added UPDES Outfall No. 005 to their UPDES permit and constructed a groundwater management system consisting of a drainage ditch above the high wall and a small dirt lined impoundment to be used for discharge at Outfall No. 005. ACD failed to add Outfall No. 005 and groundwater management system to their MRP. The Division was first informed of Outfall No. 005 during November 2011. Upon notification ACD was informed they were not permitted under their MRP for this location and must stop discharge until the location is incorporated into the MRP. ACD ceased discharge at Outfall No. 005 and submitted an addendum to their MRP. After receiving the results of the required Outfall No. 005 UPDES sampling ACD backfilled the groundwater management system and is currently pursuing alternative groundwater management system to amend to their MRP.

2. Were all required parameters reported for each site?

Springs **YES [X] NO []**

Streams **YES [X] NO []**

Stream samples were analyzed for the required operational monitoring parameters specified in the MRP. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases. Samples from stream sites SW-2, SW-3, SW-5, SW-8, and SW-9 are analyzed for dissolved selenium (no flow was present at SW-9). The Operator should update the water monitoring section of the MRP to clearly indicate the locations and frequencies where dissolved selenium monitoring will be performed to comply with Permit Condition No. 4.

Wells **YES [X] NO []**

UPDES **YES [X] NO []**

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database. In addition to the monitoring requirements established by the UPDES

permit, Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases.

3. Were irregularities found in the data?

Springs **YES [X] NO []**

SP-20 December: total alkalinity
SP-33 December: chloride
SP-4 December: total alkalinity, dissolved sodium
SP-8 December: total dissolved solids

Streams **YES [X] NO []**

BLM-1 December: conductivity
SW-1 December: cation-anion balance
SW-5 December: field conductivity, total dissolved solids, total alkalinity, dissolved calcium, chloride, dissolved sodium, sulfate, total cations, total anions
SW-8 December: total alkalinity

Wells **YES [X] NO []**

LR-45 December: field conductivity, total dissolved solids, dissolved calcium, chloride, dissolved magnesium, dissolved potassium, dissolved sodium, sulfate, total cations, total anions.
LS-28 December: total dissolved solids, chloride, dissolved magnesium, dissolved sodium, sulfate, total cation.
LS-85 December: total dissolved solids, total alkalinity, bicarbonate, dissolved calcium, dissolved magnesium, cation-anion balance
SS-30 December: dissolved calcium, dissolved magnesium, total cations
Y-61 December: total alkalinity, bicarbonate

UPDES **YES [X] NO []**

On October 21, 2011, Outfall No. 005 was sampled for total suspended solids and measured 35 mg/L. No additional sampling at Outfall No. 005 was conducted during October 2011. This exceeds the monthly average effluent limitation for total suspended solids and is equal to the weekly average effluent limitation. During October 2011, total dissolved solids measured 836 mg/L at Outfall No. 005. This exceeds the monthly average effluent trigger of 500 mg/L and triggers the maximum daily loading limitation of 1 ton per day from all outfalls which was not exceeded.

On November 21, 2011 Outfall No. 005 was sampled for total suspended solids and measured 55 mg/L. No additional sampling at Outfall No. 005 was conducted during November 2011. This exceeds the monthly average and weekly average effluent limitations for total suspended solids. During November 2011, total dissolved solids measured 1,820 and 704 at Outfall Numbers 003 and 005, respectively. This exceeds the monthly average effluent trigger of 500 mg/L and triggers the maximum daily loading limitation of 1 ton per day from all outfalls which was not exceeded.

4. On what date does the MRP require a five-year resampling of baseline water data.

Re-sampling for baseline parameters is due every five years during the third or first quarter. Baseline parameters for surface water and groundwater monitoring are listed in Table 7-6B and Table 7-7B, respectively. Assuming that the five-year baseline resampling will coincide with permit renewal, the next baseline resampling is due during third or fourth quarter 2015.

5. Based on your review, what further actions, if any, do you recommend? YES [] NO [X]

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES [] NO [X]

7. Follow-up from last quarter, if necessary.

- Revise MRP Drawing 7-10 (Water Monitoring Locations) to show spring monitoring location SP-19; and
- Revise the monitoring discussion in the MRP and associated tables to specify the locations and frequencies where selenium monitoring will be performed in accordance with Permit condition No. 4.

These two items have been added as deficiencies to Task 4101.